

REMARKS

The claims in the application remain 91-115.

Favorable reconsideration of the application is respectfully requested.

Claims 91-96, 99, 108 and 111-115 have been rejected as allegedly obvious in light of the combination of Christensen et al in view of US 3,414,602 to Acara. It is contended it would have been obvious for a person skilled in the art to take the Zeolite N of Christensen et al; and modify it such that the Si:Al ratio is not 1:1, since Acara allegedly discloses Zeolite N as having a non 1:1 ratio of these elements.

Christensen et al are discussed within the present application at some length, at least at pages 8-11 and Table 2. Page 8 of the present application sets out that "the present invention produces a form of Zeolite N which is broader in scope than that produced by Christensen.." and "The present invention surprisingly produces a form of Zeolite N by mechanical mixing of different reactants, individually or in combination, over a wide range of combinations at ambient pressures below 100°C." Further, at lines 30-35 of page 8, it is stated "In contrast, prior art teaches the use of hydrothermal synthesis in a static mixture using an autoclave to enhance crystallization from an aluminosilicate gel or zeolite A. Zeolite N of a specific composition is formed by one specific ratio of reactants in the prior art [Christensen and Fjellvag, 1997]." Therefore, the Zeolite N products of the present claims differ from those described in Christensen et al, as even acknowledged by the Examiner.

Table 2 of the present application more concisely sets out the difference between the Zeolite N products of the present invention and the single composition produced by Christensen et al. Apart from the variations in the composition, the process of Christensen et al requires high temperatures and 7 days to form their Zeolite N which is in strong contrast to the temperatures of less than 100°C and reaction time of around 6 hours in accordance with the present invention.

The Zeolite N of Christensen et al can be thought of as one point in space defined by the conditions used to achieve the synthesis. It was not clear and could not be considered obvious that a range of various Zeolite N, as provided by the present invention, could be successfully synthesized in quite different regions of this space as defined the completely different set of conditions employed in synthesis of the Zeolite N of the present invention. No indication is given in Christensen et al that the sheer variety of Zeolite N currently presented would be accessible in conformational space. Christensen et al provided only a single Zeolite N under one specific, and rather extreme, set of conditions. No further indications of scope for further accessible Zeolite N was offered beyond this and one should not to read too much into what is taught by Christensen et al. For at least these reasons, the claims of the present application should be considered inventive over the disclosure of Christensen et al.

Acara discloses a method of forming a Zeolite structure referred to as Zeolite N by calcining a clay, such as a kaolin clay, at a temperature from about 600°C to 850°C before then treating it with sodium hydroxide and tetramethylammonium hydroxide in water. It is important to understand Acara only discloses the synthesis of tetramethylammonium-containing Zeolites. For example, column 3, lines 40-45 of Acara sets out that "Zeolite N

is readily prepared by digesting and crystallizing an aqueous sodium and tetramethylammonium aluminosilicate mixture...".

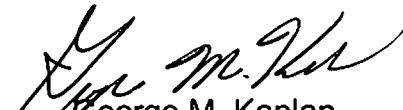
Acara also sets out "Since there is no systematic method for the chemical naming of complex aluminosilicates, it has been the general policy utilized by all workers in the Zeolite area to use an identification system primarily of capital letters." Acara then goes on to state that the name "Zeolite N" was chosen by the inventor for the trimethylammonium aluminosilicates (column 1, line 67-column 2, line 4).

It is crucial to recognize Acara was filed in 1965 when the field of Zeolites and their nomenclature was imprecisely-formulated. The random assignment of Acara has not been used for quite some time to refer to true Zeolite N. The present application addresses this issue at page 2, final paragraph, where it is stated, in part, that "The term 'zeolite N' as described in US 3,414,602 and US 3,306,922 was initially used to designate an ammonium or alkyl ammonium substituted cationic species. However, this nomenclature to describe alkyl ammonium or ammonium substituted species is no longer practiced in order to avoid confusion (Szostak, 1998)." In other words, the Zeolite species described in Acara are not considered to be Zeolite N as defined by the International Zeolite Association (IZA). The IZA defines Zeolite N as being of the edingtonite (EDI) structure and conforming with the formula given in the seminal Christensen et al paper. The IZA is recognized by those of skill in the art of Zeolite synthesis as the international body regulating the naming convention of Zeolites and it should be understood that Acara does not actually address the synthesis of Zeolite N at all and is, therefore, irrelevant to the claims of the present application.

Accordingly, it should now be clear Acara does not disclose a Zeolite N as that term is officially-defined and understood by a person of skill in the art. Such person of skill in the art would not be likely to even look to Acara as it is recognized as being outdated in that its naming convention does not conform to accepted standards and it does not give any insights into Zeolite N synthesis. Since Acara does not disclose or even suggest a method to form a Zeolite N structure, let alone those as defined in the current claims, the Applicants respectfully submit that the present claims are non-obvious over its teaching, whether considered alone or in combination with the Christiansen et al.

Early favorable action is earnestly solicited.

Respectfully submitted,



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